Facts About Hantaviruses



What You Need To Know To Prevent The Disease Hantavirus Pulmonary Syndrome (HPS)





Centers for Disease Control and Prevention

How do people get HPS?

People get HPS when they breath in hantaviruses. This can happen when rodent urine and droppings that contain a hantavirus are stirred up into the air. People can also become infected when they touch mouse or rat urine, droppings, or nesting materials that contain the virus and then touch their eyes, nose, or mouth. They can also get HPS from a mouse or rat bite.

Here are some activities that can put people at risk for HPS:

- Improperly cleaning up mouse and rat urine, droppings, and nests.
- Cleaning a shed or cabin that has been closed for some time.
- Working in areas where mice and rats may live (such as barns).

In the United States, there has never been a case in which a person with HPS has given the disease to another person.



Fever, fatigue, and muscle aches are the first symptoms of HPS

What are the symptoms of HPS?

If people get HPS, they will feel sick 1 to 5 weeks after they were around mice or rats that carried a hantavirus.

At first people with HPS will have:

- Fever
- Severe muscle aches
- Fatigue

After a few days they will have a hard time breathing. Sometimes people will have headaches, dizziness, chills, nausea, vomiting, diarrhea, and stomach pain. Usually, people do not have a runny nose, sore throat, or a rash.

How can HPS be prevented?

- Keep mice and rats out of your home.
- Clean up mouse and rat urine, droppings, and nesting materials with a disinfectant or a mixture of bleach and water.

How To Clean Up After Mice and Rats

How to clean up mouse and rat urine and droppings:

- · Wear rubber or plastic gloves.
- Spray urine and droppings with a disinfectant or a mixture of bleach and water. Make sure you get the urine and droppings very wet. Let it soak for 5 minutes.
- Use a paper towel to wipe up the urine or droppings.
- Throw the paper towel in the garbage.
- Mop or sponge the area with a disinfectant or bleach solution.
- Wash gloved hands with soap and water or spray a disinfectant or bleach solution on gloves before taking them off.
- Wash hands with soap and warm water after taking off your gloves.



Spray disinfectant

Clean-up tip:

Do not sweep or vacuum up mouse or rat urine, droppings, or nests. This will cause virus particles to go into the air, where they can be breathed in.



Bleach and water solution

Use either of these when cleaning up after mice and rats:

 General-purpose household disinfectant. Make sure the word "disinfectant" is written on the label.

OR

Bleach and water solution.
 Mix 1 1/2 cups of household
 bleach with 1 gallon of water.
 Smaller amounts can be made
 with 1 part bleach and
 9 parts water.

How to clean up a dead mouse or rat in a snap trap and how to clean up a rodent nest:

- Wear rubber or plastic gloves.
- Spray the dead mouse, rat, or nest, as well as the surrounding area, with a disinfectant or a mixture of bleach and water.
 Let it soak.
- Place nesting materials or trap with the dead rodent in a plastic bag. If you plan to reuse the trap, get the mouse or rat out of the trap by holding it over the bag and lifting the metal bar. Let the mouse or rat drop in the bag. Disinfect the trap.
- Seal the bag. Place the full bag in a second plastic bag. Seal that bag.
- Throw the bag into a covered trash can that is regularly emptied or contact your state health department for information on other ways to throw away dead mice and rats.
- Wash gloved hands with soap and water or spray a disinfectant or bleach solution on gloves before taking them off.
- Wash hands with soap and warm water after removing your gloves.

Nesting Materials:

Some materials mice and rats use to build their nests include paper, tissues, insulation, and the stuffing from furniture.





Spray gloves before taking them off

Important:

If you live in the western United States, you may be at risk for plague carried by fleas from rodents. Use insect repellent (containing DEET) on clothing, shoes, and hands to reduce the risk of flea-bites while picking up dead rodents. Contact your local or state health department to find out if plague is a danger in your area and for more information on other fleacontrol methods.

How to clean out cabins, sheds, barns, or other outbuildings:

- Open all doors and windows.
 Leave them open for 30 minutes before cleaning.
- Wear rubber or plastic gloves.
- Clean up all rodent urine, droppings, nests, or dead mice or rats by using a disinfectant or a mixture of bleach and water.

Air out cabins

 Mop floors or spray dirt floors with a disinfectant or mixture of bleach and water.



Mop floors

- Clean countertops, cabinets, and drawers with a disinfectant or a mixture of bleach and water.
- Steam clean, shampoo, or spray upholstered furniture with a detergent, disinfectant, or a mixture of bleach and water.

 Wash any bedding and clothing with laundry detergent in hot water if you see any mouse or rat urine or droppings on them.



Wash clothes and bedding with detergent in hot water

How To Keep Mice and Rats Out of Your Home

Why keep mice and rats out of your home?

Some mice and rats can carry harmful diseases, such as HPS, leptospirosis, lymphocytic choriomeningitis, plague, and typhus. The best way to protect you and your family from these diseases is to keep mice and rats out of your home.

What you can do inside your home:

- Keep food in thick plastic or metal containers with tight lids.
- Clean up spilled food right away.
 Wash dishes and cooking utensils soon after use.
- Put pet food away after use. Do not leave pet-food or water bowls out overnight.
- Keep garbage in thick plastic or metal containers with tight lids.

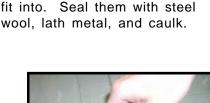


Store food in containers with lids.



Look for holes.

 Inside your home, use snap traps baited with peanut butter.



Check inside your house for gaps or holes that a pencil can



Use peanut butter on traps.

What you can do outside your home:

- Use a thick plastic or metal garbage can with a tight lid. Make sure there are no holes in the garbage can.
- Clean up trash, brush, and weeds around your home.
- Check the outside of your house for gaps and holes. Seal them with cement, lath metal, hardware cloth or sheet metal.
- Put away pet food after use.
- Keep grains and animal feed in thick plastic or metal containers with tight lids.



Use a trash can with a tight lid



Keep animal feed in a container with a tight lid

- Get rid of old trucks, cars, and old tires. Mice and rats may use these as homes.
- Keep grass and shrubbery within 100 feet of the home well trimmed.
- Move woodpiles 100 feet or more from the house. Raise the wood at least 1 foot off of the ground.
- Use traps in areas outside your home where you think mice and rats may live.
- Fix gaps in trailer skirtings.
- Keep composting bins 100 feet or more from the house.



Fix gaps in trailer skirtings

Where to look for gaps or holes inside your home:

- Inside, under, and behind kitchen cabinets.
- Inside closets near the floor corners.
- Around the fireplace.
- Around doors.
- Around the pipes under sinks and washing machines.
- Around the pipes going to hot water heaters and furnaces.
- Around floor air vents and dryer vents.



Look for gaps where the water pipes come into your home

- Inside the attic.
- In the basement or crawl space.

Where to look for gaps and holes outside your home:

- In the roof among the rafters, gables, and eaves.
- Around windows.
- Around doors.
- Between the foundation of your house and the ground.
- Attic vents and crawl space vents.
- Under doors.
- Around holes for electrical, plumbing, and gas lines.



Look for gaps around pipes outside your home.

How to seal gaps and holes inside and outside your house:

- Fill small holes with steel wool. Put caulk around steel wool to keep it in place.
- Use lath screen or lath metal, cement, hardware cloth, or metal sheeting to fix large holes. Lath screen can be folded and pushed into holes. It can also be cut to fit around pipes. This material can be found in the masonry or building materials section at a hardware store.



Seal holes with caulk



Fold lath metal and place in holes in the foundation of houses



Use lath metal around pipes

How to use snap traps:

- Choose the right kind of snap trap. Some traps are made for catching mice and some traps are made for catching rats.
- Read the instructions on the box before setting the snap trap.
- Place some peanut butter about the size of a pea on the bait pan on the snap trap. Chunky peanut butter works best.
- Place the snap trap on the floor right next to the wall. Put the end of the trap with the bait on it next to the wall so it forms a "T" with the wall.



Put peanut butter on trap



Place trap so it makes a "T" with the wall

- Place snap traps in areas where you have seen mice or rats, nesting materials, urine and droppings, or nibbled food.
 Also, place snap traps in closed areas, such as behind the stove and refrigerator, and in the back of cabinets and drawers.
- Put traps near other areas where you think mice or rats are coming into your home.

Trapping tips:

- Keep traps away from children and pets.
- Use only snap traps. Glue traps and live traps should not be used. These traps can scare the caught live mice and rats and cause them to urinate. This may increase your chance of getting sick.

How to use poison baits:

Poison baits can be useful if you have a serious mouse or rat problem. Make sure to carefully read the instructions on the bait package you buy.

- Place bait trays or bait station in or near places where you have seen mice or rats, droppings, or nesting materials.
- Place baits out of reach from children and pets.
- Check bait every week and re-fill or move it as needed for at least 15 days. Leave the bait out longer if you still have mice and rats.



Place bait where you have seen mice or rats

Important trapping and bait reminders:

- Keep traps and bait out of reach from children and pets.
- If you live in the western United States, you may be at risk for plague carried by fleas from rodents. Use insect repellent (containing DEET) on clothing, shoes, and hands to reduce the risk of flea-bites while picking up dead rodents. Contact your local or state health department to find out if plague is a danger in your area and for more information on flea-control methods.

For more information about hantavirus pulmonary syndrome or rodent control, call your state or local health department.

Or call the Centers for Disease Control and Prevention (CDC) at 1-877-232-3322

Or see the CDC web page at: http://www.cdc.gov/ncidod/diseases/hanta/hps/ index.htm

For more information contact your local health department or:

Arizona Department of Health Services 150 N. 18th Avenue, Suite 140 Phoenix, Arizona 85007

Tel: (602) 364-4562 Fax: (602) 364-3198 Toll Free: (800) 334-1540

Arizona website: www.azdhs.gov/phs/oids/vector/index.htm www.azdhs.gov/phs/oids/vector/index.htm http://www.azdhs.gov/phs/oids/vector/index.htm http://www.azdhs.gov/

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What if I find signs of mice in my home?

Removing rodents from your home will decrease your risk of Hantavirus infection and other rodent-borne illnesses. Follow these standard rodent removal and clean-up guidelines:

- Set traps that will kill the mouse or rat.
 Use peanut butter as bait.
- 2) Wear rubber gloves and spray the nest area or dead rodent with a household insecticide that kills fleas. Be sure to follow the label instructions and wait at least one hour for the insecticide to work.
- 3) Next, spray the nest or dead rodent until soaked with a household disinfectant solution, such as Lysol®, mixed as recommended on the label. A solution of one part household bleach to nine parts water may be used, but it may damage rugs and fabrics and irritate skin. Let the area soak for 10-15 minutes. Spraying disinfectant will help to kill the virus and settle the dust.
- 4) Remove the nest or rodent using a long handled shovel.
- 5) Double bag the rodent or nest securely with plastic bags and dispose of them in the trash.
- 6) Clean up the rodent area, or any area with signs of droppings, by spraying it with the disinfectant. Let the area soak for 10-15 minutes. While still wearing gloves, wipe up the area with paper towels or rags. Double-bag all paper towels, rags or gloves used in the clean up. Dispose of them in the trash.

Can the Health Department test rodents that I have trapped for Hantavirus?

At present, <u>all</u> rodent testing for Hantavirus is done by the Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia. The CDC will only test rodent specimens that are collected as part of a specific Hantavirus study. Any rodents that are trapped in or around your home should be disposed of according to the instructions in this brochure.

Are there any travel restrictions in Arizona?

There are no travel restrictions in Arizona or other states with confirmed Hantavirus cases.

Where does the Hantavirus occur?

Studies in Arizona have shown that Hantavirus infections can occur in wild mice throughout the state, and human cases of HPS have occurred in both northern and southern counties. People living or working in rural areas are at a greater risk for encountering wild mice and their droppings. In the United States, HPS cases have occurred from coast to coast. Over 40% of the cases have been fatal.

For more information contact your local health department or:

Arizona Department of Health Services
Bureau of Epidemiology & Disease Control
Office of Infectious Disease Services
Vector-Borne and Zoonotic Diseases
150 N. 18th Avenue, Suite 140
Phoenix, Arizona 85007
Tel: (602) 364-4562 Fax: (602) 364-3198
(800) 314-9243

Arizona website:

www.azdhs.gov/phs/oids/vector/index.htm

CDC Website:

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Hantavirus Pulmonary Syndrome





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March 2005

In May 1993, health officials investigated an outbreak of an unusual illness in the southwestern United States that causes a person's lungs to fill with fluid. The investigation led to the identification of a new viral disease called Hantavirus Pulmonary Syndrome (HPS). Since the discovery of this disease, HPS cases have been reported in many states across the nation.

What causes Hantavirus Pulmonary Syndrome (HPS)?

HPS is caused by a newly identified strain of Hantavirus found in certain types of rodents. It is similar to other Hantaviruses found in other parts of the country as well as in other parts of the world. The strain of Hantavirus found in the western United States is called the Sin Nombre Virus (Spanish for "virus with no name") and is carried primarily by wild mice. Other strains of Hantavirus have also been identified in certain eastern states.

How does a person get Hantavirus Pulmonary Syndrome (HPS)?

Like other strains of Hantavirus found in rodents, the "new" strain is probably excreted in the urine, droppings or saliva of infected rodents. A person is infected with the virus by breathing in viral particles released into the air when infected rodents. their nests or their droppings are disturbed. This can happen when a person is handling rodents, disturbing rodent nests or burrows, cleaning buildings where rodents have made a home, or working outdoors. The virus will die quickly when exposed to sunlight. No evidence of person-to-person spread of the virus exists in the United States. Health care workers and family members of HPS patients have not caught the illness.

Who has been affected by Hantavirus Pulmonary Syndrome?

Although anyone can get this illness, HPS patients have ranged in age from 11 to 69 years old. HPS affects people of all races and ethnic groups. It has occurred in Anglos, Hispanics, African-Americans, American Indians and Asians.

How soon after contact with this Hantavirus do symptoms appear?

Based on interviews with HPS patients, their families and doctors, the first symptoms generally appear within 1-6 weeks of contact with the virus.

What are the symptoms of Hantavirus Pulmonary Syndrome (HPS)?

The first symptoms of hantaviral illness are much like those of other illnesses. They are flu-like and may include:

- fever
- muscle aches
- a dry, non-productive cough
- vomiting
- abdominal pain

These symptoms may last from 2-15 days. Next, the person's lungs begin filling with fluid and they have difficulty breathing. If you develop these symptoms within 1-6 weeks after inhaling rodent contaminated dust, see your doctor immediately.

Is there any treatment available for persons with Hantavirus Pulmonary Syndrome?

Some patients have received an experimental drug that helps with illness caused by other strains of Hantavirus found in other parts of the world. Other patients have recovered with intensive hospital care.

How can I protect myself from Hantavirus Pulmonary Syndrome?

The best defense against infection with Hantavirus is to avoid all contact with rodents, their nests and droppings. If you discover rodents or their nests outside of your residence, leave them alone if possible. To discourage rodents from entering your home, take the following precautions:

- Seal, cover or screen openings larger than a quarter inch to prevent mice from entering homes, sheds or crawl spaces.
- Wash dirty dishes and clean up spilled food immediately.
- Keep food, including pet food, tightly sealed or covered in hard plastic or metal containers. Do not leave pet food out overnight.
- Avoid sweeping or vacuuming areas with evidence of rodent droppings until proper clean-up methods have been used (see #6 below).

The Prevention of Hantavirus Disease

Air out closed buildings 1 hour. Disinfect places rodents have been, then clean up.





Repair screens and holes or cracks in walls.





Wear rubber gloves. Trap and disinfect rodents.





Disinfect and clean up rodent nests and droppings.

Put materials in 2 trash bags; throw away, burn or bury.



Formula for Disinfectant Solution:

1 and 1/2 cups of chlorine bleach to every gallon of water. Or use household spray disinfectant.

> For more information, call your state health department. Or call CDC toll-free at 1-877-232-3322.

Hantavirus Protect Yourself and Your Family

For more information contact your local health department or:

Arizona Department of Health Services Bureau of Epidemiology & Disease Control Office of Infectious Disease Services **Vector-Borne and Zoonotic Disease Section** 150 N. 18th Avenue, Suite 140 Phoenix, Arizona 85007 Tel: (602) 364-4562 Fax: (602) 364-3198 (800) 314-9243

www.azdhs.gov/phs/oids/vector/index.htm

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SEAL UP! TRAP UP! CLEAN U

Protect Your Family from Hantavirus Pulmonary Syndrome (HPS)



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MARCH 2005



SEAL UP

Seal up holes inside and outside the home to prevent entry by rodents.

Prevent rodents from entering the home by checking inside the house for gaps or holes any larger than a pencil could fit into. Potential rodent entry holes can be found inside, under, and behind kitchen cabinets, inside closets, around doors, and under sinks. Seal the holes, using steel wool, lath metal, or caulk. If you do not remember to seal up entry holes in your home, mice will continue to enter.

Prevent rodents from entering the home outside. Clear brush and grass from around the foundation of the home. Check the house for debris and holes that might encourage rodent infestations. Potential rodent entry holes can be found around windows and doors, between the foundation of your house and the ground, and around electrical, plumbing and gas lines. Seal possible entry holes with cement, lath metal, hardware cloth, or sheet metal. Fix gaps in trailer skirtings and use flashing around the base of the house.





TRAP UP

Trap rodents around the home to help reduce the population.

- ✓ Choose an appropriate snap trap. Traps for catching mice are different from those for catching rats. Always read the instructions on the box before setting the trap. A small amount of peanut butter (approximately the size of a pea) should be placed on the bait pan of the snap trap. Position the bait end of the trap next to the wall so it forms a "T" with the wall.
- Glue traps and live traps are not recommended. These traps can scare mice that are caught live and cause them to urinate. This may increase your risk of being exposed to Hantavirus.
- ✓ Place traps in outbuildings and in areas that might likely serve as rodent shelters. Natural rodent predators, such as non-poisonous snakes, owls, and hawks, may also be beneficial in the control and reduction of rodents outside the home.



CLEAN UP

Clean up urine and droppings

Take precautions before and while cleaning rodentinfested areas. Before cleaning a space, ventilate the area by opening the doors and windows for at least 30 minutes to diffuse potentially infectious aerosolized material. Use cross-ventilation and leave the area during the airing-out period.

When you begin cleaning, it is important that you do not stir up dust by sweeping or vacuuming up droppings, urine, or nesting materials. Wear rubber, latex, vinyl, or nitrile gloves when cleaning urine and droppings. Spray the urine and droppings with a disinfectant or a mixture of bleach and water and let soak 5 minutes. The recommended concentration of bleach solution is 1 part bleach to 10 parts water. Use a paper towel to pick up the urine and droppings, and dispose of the waste in the garbage. After the rodent droppings and urine have been removed, disinfect items that might have been contaminated by rodents or their urine and droppings.

Mop floors and clean countertops with disinfectant or bleach solution. Steam clean or shampoo upholstered furniture and carpets with evidence of rodent exposure. Wash any bedding and clothing with laundry detergent in hot water if exposed to rodent urine or droppings. Lastly, before removing gloves used while cleaning, wash gloved hands with soap and water or spray a disinfectant or bleach solution on gloves before taking them off. Wash hands with soap and warm water after removing glovesolized material. Wear rubber, latex, vinyl, or nitrile gloves and clean up all rodent urine, droppings, nests, and dead rodents using disinfectant or bleach and water. Mop floors or spray dirt floors with a disinfectant or mixture of bleach and water. Clean countertops, cabinets, and drawers with a disinfectant or a mixture of bleach and water. The special precautions may also apply to vacant dwellings that have attracted large numbers of rodents and to dwellings and other structures that have been occupied by persons with confirmed Hantavirus infection.

HANTAVIRUS RECREATION TIPS

Certain forms of outdoor recreation, such as camping and hiking, can pose a risk for Hantavirus exposure. A few precautions should be taken, including:

- Do not attempt to feed rodents by hand since this often leads to bites.
- Campers should not pitch tents or place sleeping bags in close proximity to rodent nests, burrows, or in areas of heavy rodent activity.
- If possible, do not sleep on the bare ground. Use a cot to get up off the ground, or better yet, sleep inside a tent with a floor.
- Keep tents zipped up to keep animals out.
- Keep food in rodent-proof containers, and discard any food items that may have been "raided" by rodents.
- When feasible, promptly dispose of trash in covered containers or temporarily store garbage items away from camp, so as to avoid attracting rodents.
- Use only bottled water or water that has been disinfected by filtration, boiling, chlorination, or iodination for drinking, cooking, washing dishes, and brushing teeth.



For more information contact your local health department or:



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HANTAVIRUS PREVENTION CHECKLIST

The best way to protect yourself from Hantavirus is to keep rodents out of your home.

Inside

Uncovered food	□ Yes	□ No	Store food in covered containers
Pet/animal food	□ Yes	□ No	Do not leave pet food out (inside or outside)
			overnight. Store food in rodent-proof containers.
Uncovered garbage	□ Yes	□ No	Store trash in covered containers. Take garbage out
			frequently.
Dirty dishes	□ Yes	□ No	Wash dishes promptly. Do not leave dirty dishes in
			sink overnight.
Feces/droppings/nests	□ Yes	□ No	Soak rodent feces & nests with disinfectant prior to
			clean-up & removal.
Cracks in walls	□ Yes	□ No	Patch cracks with plaster, cement, or metal
			flashing/screening.
Holes in walls/windows	□ Yes	□ No	Patch holes & repair window screens.
Vents: Dryer, stove, heater	□ Yes	□ No	Cover openings with heavy gauge wire screen.
Pipes: Water, gas	□ Yes	□ No	Plug gaps in walls around pipes with steel wool or
			metal screen.

Outside

Uncovered, loose garbage	□ Yes	□ No	Store garbage in covered containers.
Woodpile	□ Yes	□ No	Move woodpile away from house.
Compost	□ Yes	□ No	Move compost pile away from house and use a compost bin.
Weeds	□ Yes	□ No	Trim, mow or remove weeds.
Junk piles/cars	□ Yes	□ No	Remove clutter around house.
Vents	□ Yes	□ No	Cover with heavy gauge wire screen.
Cracks in walls	□ Yes	□ No	Plug cracks with plaster, cement, wire screen, etc
Drains / pipes	□ Yes	□ No	Plug holes in walls around pipes with screening, steel wool, metal flashing or plaster.
Crawl space cover	□ Yes	□ No	Plug gaps with screen or tight fitting door.

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The Prevention of Hantavirus Disease

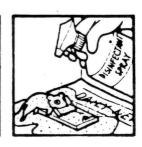
Air out closed buildings 1 hour. Disinfect places rodents have been, then clean up.





Repair screens and holes or cracks in walls.





Wear rubber gloves.

Trap and disinfect rodents.





Disinfect and clean up rodent nests and droppings.

Put materials in 2 trash bags; throw away, burn or bury.



Formula for Disinfectant Solution:

1 and 1/2 cups of chlorine bleach to every gallon of water. Or use household spray disinfectant.

For more information, call your state health department. Or call CDC toll-free at 1-877-232-3322.